

Inequalities

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

$$2x < 10$$

Step 1 · Divide both sides by 2

$$x < 5$$

Answer: $x < 5$

Check: Try $x = 4$: $2 \times 4 = 8 < 10$ ✓ Try $x = 5$: $2 \times 5 = 10$ ✗ (not strictly less)

2. Now try one with the steps

$$3x + 1 \geq 10$$

Step 1 · Subtract 1 from both sides

Step 2 · Divide both sides by 3

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. $x + 3 > 7$ [1]

2. $x - 2 \leq 5$ [1]

3. $4x < 20$ [1]

4. $2x + 5 \geq 11$ [2]

5. $-3x < 12$ [2]

6. $5 - 2x > 1$ [3]

7. $x/2 \geq 3$ [1]

8. $x + 8 < 3$ [1]

9. $3x - 4 > 11$ [2]

10. List the integers n that satisfy $-2 < n \leq 3$ [2]

11. A number line has an open circle at 2 and an arrow pointing to the left. Write the inequality it shows. [1]

12. $4x + 3 \leq 2x + 11$ [2]

13. $3(x - 2) \geq 9$ [2]

14. Find the largest integer x that satisfies $5x - 2 < 23$ [2]

15. $4 - 3x \leq 16$ [3]

16. $1 < 2x + 3 \leq 9$

[3]

17. List the integers x that satisfy $-3 \leq 2x + 1 < 7$

[3]

4. Before you hand it in

$-2x > 6 \rightarrow x > -3$

Any time you multiply or divide both sides by a negative number, the inequality sign must reverse. $-2x > 6 \rightarrow x < -3$.

$x > 3$ drawn with a filled circle

Open circle = strict ($<$ or $>$), value excluded. Filled circle = non-strict ($\leq$ or $\geq$), value included.

Writing the answer = 4 after solving $2x < 10$

The answer is a range: $x < 5$, not a single value. Show it on a number line.